



# Australian Bureau of Statistics

## 6265.0 - Underemployed Workers, Australia, September 2012

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## Summary

### Main Features

### NOTES

### ABOUT THIS PUBLICATION

This publication presents information about underemployed workers. The number of underemployed workers is an important component of underutilised labour resources in the economy, along with the number of unemployed and some people with marginal attachment to the labour force. Underemployed workers are defined as part-time workers who want, and are available for more hours of work than they currently have, and full-time workers who worked part-time hours during the reference week for economic reasons (such as being stood down or insufficient work being available).

The statistics in this publication were compiled from the Underemployed Workers Survey conducted throughout Australia in September 2012 as a supplement to the Australian Bureau of Statistics (ABS) monthly Labour Force Survey (LFS). A range of information is presented on underemployed workers including the number of hours usually worked, number of preferred hours, steps taken to find work with more hours and difficulties finding work with more hours. This publication presents information about the characteristics of underemployed workers aged 15 years and over.

For time series information on the number of underemployed workers, users are advised to use the quarterly Labour Force Survey estimates. Trend, seasonally adjusted and original estimates are published each month in Labour Force, Australia (cat. no. 6202.0), tables 22 to 23.

### ROUNDING

As estimates have been rounded, discrepancies may occur between sums of the component items and totals.

### INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Labour Supplementary Survey Section on Canberra (02) 6252 7206, email <[labour.statistics@abs.gov.au](mailto:labour.statistics@abs.gov.au)>.

# Conceptual Framework

## CONCEPTUAL FRAMEWORK

### CONCEPTUAL FRAMEWORK

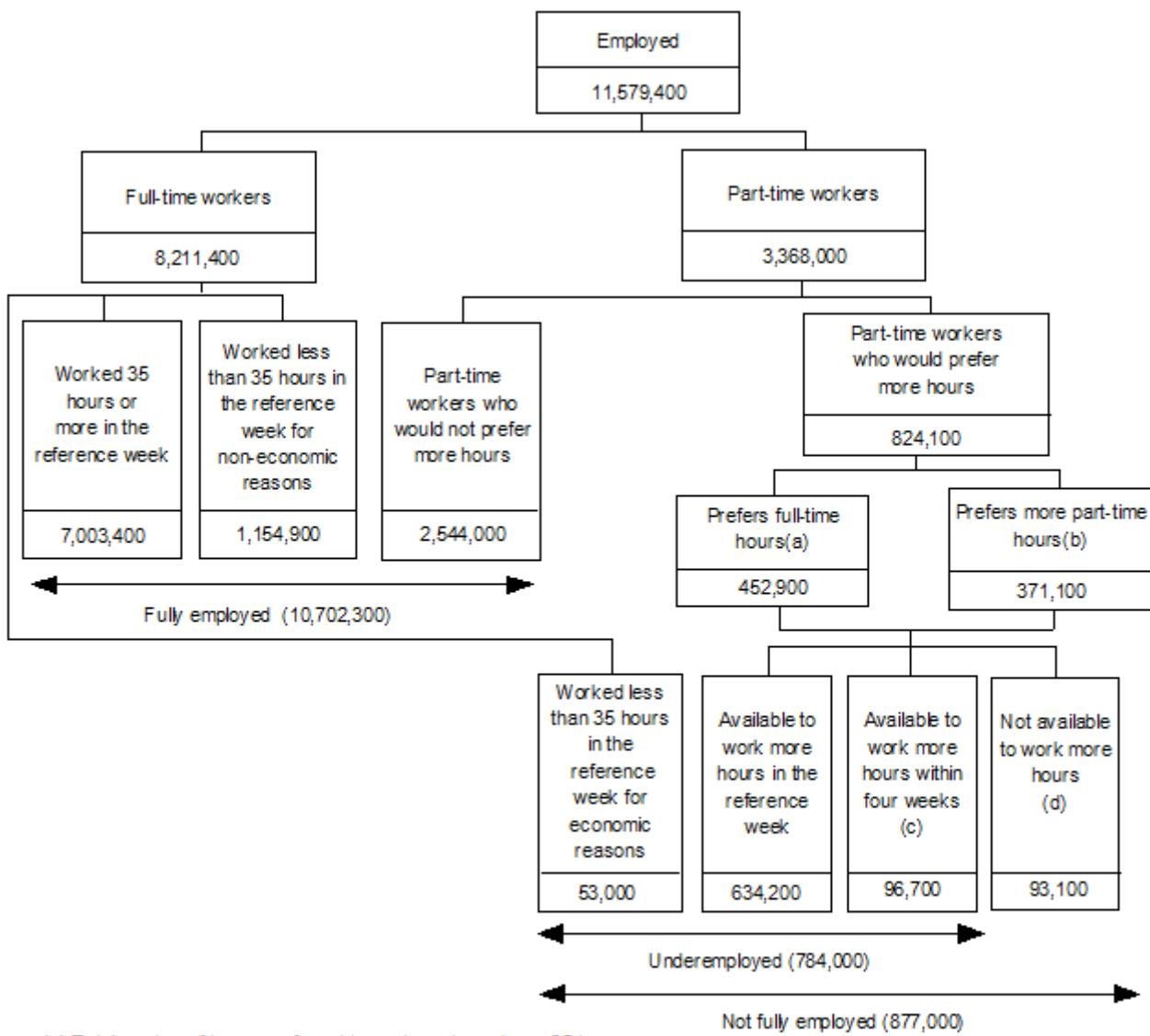
The ABS conceptual framework for underemployment separates employed people into two mutually exclusive groups:

- workers who are considered to be fully employed, comprising:
  - employed people who worked full-time during the reference week (includes people who usually work part-time);
  - employed people who usually work full-time but worked part-time in the reference week for non-economic reasons (including illness or injury, leave, holiday or flexitime, and personal reasons); and
  - part-time workers (usually work part-time and did so in the reference week) who would not prefer additional hours of work.
- workers who are not fully employed, comprising:
  - part-time workers who would prefer to work more hours; and
  - full-time workers who worked part-time in the reference week for economic reasons (such as being stood down or insufficient work being available).

The conceptual framework further defines workers who are underemployed, comprising:

- part-time workers who would prefer to work more hours and were available to start work with more hours, either in the reference week or in the four weeks following the survey; and
- full-time workers who worked part-time hours in the reference week for economic reasons (such as being stood down or insufficient work being available).

The following diagram presents the conceptual framework as at September 2012.



(a) Total number of hours preferred to work each week are 35 hours or more.  
 (b) Total number of hours preferred to work each week are between 1 to 34 hours.  
 (c) Available within four weeks but not in the reference week.  
 (d) Availability refers to 'in the reference week or within four weeks'.

## Summary of Findings

### SUMMARY OF FINDINGS

#### OVERVIEW

The Underemployed Workers Survey found that of the 11.6 million employed people aged 15 years and over in September 2012:

- 10.7 million (92%) were fully employed; and
- 877,000 (8%) were not fully employed, of whom 784,000 were underemployed.

Of the 784,000 underemployed workers (see Tables 1 and 2):

- 730,900 usually worked part-time, but would prefer more hours and were available to

- start work with more hours either in the reference week, or in the four weeks following the interview; and
- 53,000 usually worked full-time, but worked part-time hours in the reference week due to economic reasons (for example, no work or not enough work available, been stood down, or on short time).

## **PART-TIME WORKERS WHO WOULD PREFER MORE HOURS**

In September 2012, there were 3.4 million part-time workers, of which 71% (2.4 million) were women.

Nearly a quarter (24%) of all part-time workers stated they would prefer to work more hours. This was the same as the proportion of part-time workers (24%) who said they would prefer to work more hours in September 2011.

Of the 824,100 part-time workers who would prefer more hours (see Tables 1, 2 and 3):

- 36% were men and 64% were women;
- just over half (55%) would prefer to work full-time;
- 89% (730,900) were available for work with more hours, of whom 47% were looking for more work hours; and
- 93,100 (11%) were not available for work with more hours, of whom 16% were looking for work with more hours.

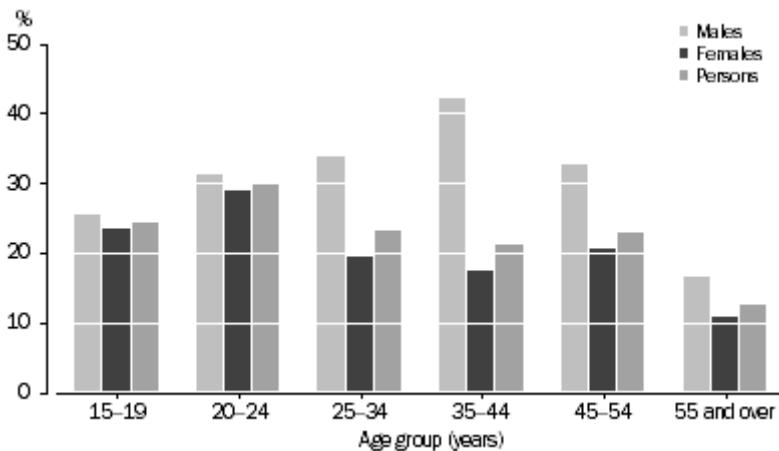
## **UNDEREMPLOYED PART-TIME WORKERS**

Underemployed part-time workers are people who usually work less than 35 hours a week, would prefer to work more hours and are available to start work with more hours within four weeks. In September 2012, there were 730,900 underemployed part-time workers.

Of the underemployed part-time workers (see Tables 1 and 3):

- 63% were women;
- 28% of male part-time workers were underemployed, compared with 19% of women; and
- 61% reported they would prefer not to change their employer to work more hours, 25% would prefer to change employer, while the remaining 14% had no preference.

## **UNDEREMPLOYED PART-TIME WORKERS AS A PROPORTION OF PART-TIME WORKERS, Age-By sex**



### UNDEREMPLOYED PART-TIME WORKERS AND PART-TIME WORKERS, By age - By sex

Age group (years)	Underemployed part-time workers			Part-time workers		
	Males '000	Females '000	Persons '000	Males '000	Females '000	Persons '000
15-19	49.2	64.8	114.0	194.5	275.7	470.2
20-24	58.8	70.9	129.8	188.9	245.8	434.6
25-34	45.1	74.8	120.0	134.4	384.2	518.5
35-44	39.9	96.4	136.3	95.1	552.0	647.1
45-54	37.4	100.0	137.4	114.1	485.4	599.5
55 and over	42.8	50.7	93.5	259.1	439.0	698.1
<b>Total</b>	<b>273.3</b>	<b>457.7</b>	<b>730.9</b>	<b>986.0</b>	<b>2 382.0</b>	<b>3 368.0</b>

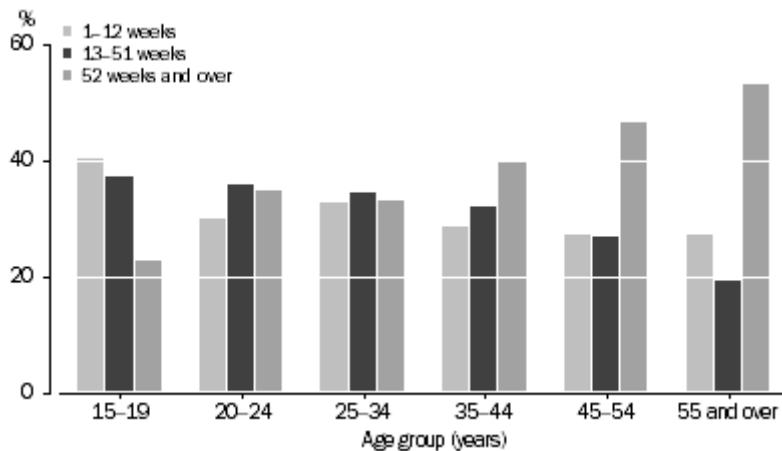
There were a higher number of women employed part-time than men. There were also a higher number of women employed part-time who were underemployed (457,700 compared with 273,300 men). However, the proportion of underemployment for part-time workers was higher for men (28%) than women (19%), with the greatest difference for those aged 35-44 years (42% for men and 17% for women) (see Tables 1 and 3).

Underemployed part-time men were more likely to report that they would move to another part of their state if they were offered a suitable job (35%) than women (21%) (see Table 5). Over one quarter (28%) of underemployed part-time men and 14% of women reported that they would move interstate if offered a suitable job.

#### Duration of current period of insufficient work

The median duration of the current period of insufficient work for underemployed part-time workers was 26 weeks, while the mean duration was 69 weeks (see Table 4). The median is the midpoint of the number of weeks of underemployment while the higher mean was influenced by people who had long spells of underemployment.

#### UNDEREMPLOYED PART-TIME WORKERS, Duration of current period of insufficient work-By age

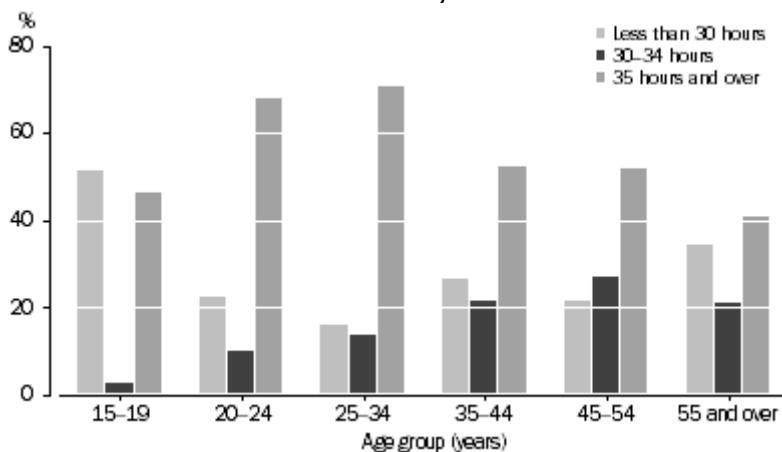


Older people generally had a longer duration of underemployment than younger people (see Table 4). For example, just over 23% of 15-19 year old underemployed part-time workers had experienced insufficient work for one year or more. In contrast, around half of those aged 55 years and over (54%) and those aged 45-54 years (46%), had insufficient work for one year or more.

### Preferred total number of hours

Over half (56%) of underemployed part-time workers would prefer to work full-time (35 hours or more per week) (see Table 4). More male underemployed part-time workers wanted to work 35 hours or more per week (69%) than women (48%). Those in the 20-24 and 25-34 age groups were more likely to want to work full-time (e.g. 70% of those aged 25-34 years), while those aged 15-19 years were most (44%) likely to prefer to work a total of less than 30 hours per week.

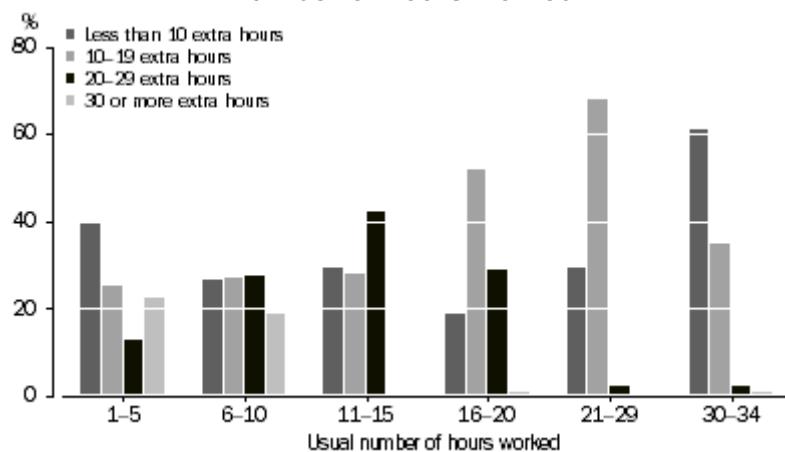
### UNDEREMPLOYED PART-TIME WORKERS, Preferred total number of hours-By age



### Preferred number of extra hours

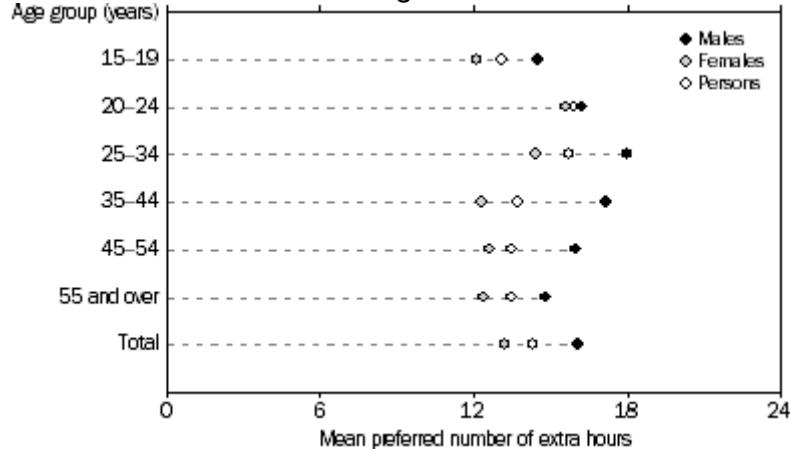
For underemployed part-time workers, the preferred number of extra hours varied with the number of hours they usually worked (see Table 5). For example, 60% of those who usually worked 1-5 hours a week preferred to work 10 or more extra hours per week, and of those who worked 30-34 hours a week, a similar proportion (61%) preferred to work less than 10 extra hours per week.

## UNDEREMPLOYED PART-TIME WORKERS, Preferred number of extra hours-By usual number of hours worked



The mean preferred number of extra hours per week for underemployed part-time workers was 14 hours (see Table 5). The mean preferred number of extra hours was lowest for people aged 15-19 years (13 hours), and highest for those aged 20-24 years (16 hours). On average, men preferred to work an extra 16 hours per week, compared with women who preferred to work an extra 13 hours per week. Men preferred more hours than women in all age groups, except the 20-24 year age group where the difference was not statistically significant.

## UNDEREMPLOYED PART-TIME WORKERS, Mean preferred number of extra hours-By age



### Looking for work with more hours

Of the 730,900 underemployed part-time workers, nearly half (343,700) had looked for work with more hours at some time during the four weeks prior to the survey (see Table 6). For male underemployed part-time workers, 52% were looking for work with more hours, compared with 44% for women.

The most common steps taken to look for work with more hours, in the last four weeks, by underemployed part-time workers, were 'asked current employer for more work' (61%), 'searched Internet sites' (59%) and 'contacted prospective employers' (54%) (see Table 7).

Underemployed workers who had looked for work most commonly reported that their main difficulty in finding work with more hours was that there was 'no vacancies in line of work'

(20%) (see Table 6). It was the most commonly reported reason for both men (24%) and women (17%). The next most commonly reported specific reason for men was 'no vacancies at all' (10%), whereas women reported 'too many applicants for available jobs' (11%).

## **UNDEREMPLOYED FULL-TIME WORKERS**

There were 8.2 million full-time workers in September 2012, 71% of all employed people (see Table 1). Of those who usually worked full-time, 1.2 million people (15%) had worked less than 35 hours in the reference week in September 2012, with 53,000 (4%) of these people working fewer than 35 hours for economic reasons. Of these 53,000 people, 81% were men.

## **About this Release**

Provides information on visible underemployment. Persons who worked less than 35 hours in the week prior to the survey who would have preferred to work more hours were asked about whether they were looking for work with more hours, available to start work with more hours, and their experience in looking for work with more hours. Other information includes, the duration of the current period of insufficient work, and the number of extra hours preferred. Estimates can be cross-classified by labour force demographics such as State, sex, age, marital status and birthplace.

## **History of Changes**

**This document was added or updated on 12/06/2013.**

**12/06/2013.** Correction to the previously published estimate of the number of male part-time workers who would not prefer to work more hours in 2012. This number appears in table 1 of the publication and in the corresponding data cube.

## **Explanatory Notes**

### **Explanatory Notes**

#### **EXPLANATORY NOTES**

#### **INTRODUCTION**

**1** The statistics in this publication were compiled from data collected in the Underemployed Workers Survey conducted throughout Australia in September 2012 as a supplement to the Australian Bureau of Statistics (ABS) monthly Labour Force Survey (LFS). Respondents to

the monthly LFS who were within the scope of the supplementary survey were asked further questions.

**2** The publication **Labour Force, Australia** (cat. no. 6202.0) contains information about survey design, sample redesign, scope, coverage and population benchmarks relevant to the monthly LFS, which also apply to supplementary surveys. It also contains definitions of demographic and labour force characteristics, and information about telephone interviewing relevant to both the monthly LFS and supplementary surveys.

## **CONCEPTS, SOURCES AND METHODS**

**3** The conceptual framework used in Australia's LFS aligns closely with the standards and guidelines set out in the Resolutions of the International Conference of Labour Statisticians. Descriptions of the underlying concepts and structure of Australia's labour force statistics, and the sources and methods used in compiling these estimates, are presented in **Labour Statistics: Concepts, Sources and Methods** (cat. no. 6102.0.55.001).

## **SCOPE**

**4** The scope of the LFS is restricted to people aged 15 years and over and excludes the following people:

- members of the permanent defence forces;
- certain diplomatic personnel of overseas governments, customarily excluded from the census and estimated populations;
- overseas residents in Australia; and
- members of non-Australian defence forces (and their dependants).

**5** Students at boarding schools, patients in hospitals, residents of homes (e.g. retirement homes, homes for people with disabilities), and inmates of prisons are excluded from all supplementary surveys.

**6** This supplementary survey was conducted in both urban and rural areas in all states and territories but excluded people living in Indigenous communities in very remote parts of Australia.

## **COVERAGE**

**7** The estimates in this publication relate to people covered by the survey in September 2012. In the LFS, coverage rules are applied which aim to ensure that each person is associated with only one dwelling and hence has only one chance of selection in the survey. See **Labour Force, Australia** (cat. no. 6202.0) for more details.

## **SAMPLE SIZE**

**8** Supplementary surveys are not always conducted on the full LFS sample. Since August 1994, the sample for supplementary surveys has been restricted to no more than seven-eighths of the LFS sample.

**9** The initial sample for the September 2012 LFS consisted of 36,897 private dwelling

households and special dwelling units. Of the 29,735 private dwelling households and special dwelling units that remained in the survey after sample loss (e.g. households selected in the survey which had no residents in scope for the LFS, vacant or derelict dwellings and dwellings under construction), approximately 28,162 or 94.7% fully responded to the Underemployed Workers Survey. The number of completed interviews obtained from these private dwelling households and special dwelling units (after taking into account scope, coverage and subsampling exclusions) was 30,502.

## **RELIABILITY OF THE ESTIMATES**

**10** Estimates in this publication are subject to sampling and non-sampling errors:

- Sampling error is the difference between the published estimate and the value that would have been produced if all dwellings had been included in the survey. For more information see the Technical Note.
- Non-sampling errors are inaccuracies that occur because of imperfections in reporting by respondents and interviewers, and errors made in coding and processing data. These inaccuracies may occur in any enumeration, whether it be a full count or a sample. Every effort is made to reduce the non-sampling error to a minimum by careful design of questionnaires, intensive training and supervision of interviewers, and effective processing procedures.

## **SEASONAL FACTORS**

**11** The estimates are based on information collected in the survey month (September) and, due to seasonal factors, may not be representative of other months of the year.

## **CLASSIFICATIONS USED**

**12** Country of birth data are classified according to the **Standard Australian Classification of Countries (SACC), 2011** (cat. no. 1269.0).

**13** Educational attainment data are classified according to **Australian Standard Classification of Education (ASCED), 2001** (cat. no. 1272.0). See Appendix 1 for further information.

## **COMPARABILITY OF TIME SERIES**

**14** The Labour Force Survey estimates, and estimates from the supplementary surveys, are calculated in such a way as to sum to independent estimates of the civilian population aged 15 years and over (population benchmarks). These population benchmarks are based on Estimated Resident Population (ERP) data. Generally, revisions are made to population benchmarks for the LFS following the final rebasing of population estimates to the latest five-yearly Census of Population and Housing, or when the need arises.

**15** From February 2009 Labour Force Estimates have been compiled using population benchmarks based on the 2006 Census of Population and Housing. Revisions were applied to the population benchmarks in July 2010 and December 2012 to take into account the latest available population estimates in the LFS population benchmarks. The latest revision undertaken in December 2012 is not reflected in the estimates presented in this issue.

**16** Changes to the LFS population benchmarks impact primarily on the magnitude of the Labour Force Survey estimates (i.e. employment and unemployment) that are directly related to the underlying size of the population. For more details on population benchmarks, see the Explanatory Notes in Labour Force, Australia (cat. no. 6202.0) and for details about the revisions made, see the article in the November 2012 issue of Labour Force, Australia (cat. no. 6202.0) and the article in the September 2010 issue of Labour Force, Australia (cat. no. 6202.0).

## COMPARABILITY WITH PREVIOUS SURVEYS

**17** In September 2008 there was a substantial increase in the number of part-time workers who preferred more hours and underemployed workers. This was due to a change in the question being asked of part-time workers. From September 2008, part-time workers were asked "Would you prefer to work more hours than you usually work?". In previous surveys part-time workers were asked "Would you prefer a job in which you worked more hours a week?". The question was altered to be consistent with the LFS and is now broader and more inclusive of people's situations as it relates to a preference for more hours of work.

**18** This change contributed to an additional 115,800 people who were classified as part-time workers who preferred more hours and an additional 131,500 people who were classified as underemployed workers in 2008. Users need to exercise care when comparing the number of part-time workers who preferred more hours and unemployed workers from 2008 onwards with previous releases because of this break in the series.

**19** From July 2004, a change was made to the category 'considered too young or too old by employers' for the items 'all difficulties in finding work with more hours' and 'main difficulty in finding work with more hours'. The category has been split into 'considered too young by employers' and 'considered to old by employers'.

## COMPARABILITY WITH MONTHLY LFS STATISTICS

**20** Due to differences in the scope and sample size of this supplementary survey and that of the monthly LFS, the estimation procedure may lead to some small variations between labour force estimates from this survey and those from the monthly LFS.

## COMPARABILITY WITH ILO GUIDELINES

**21** The ABS definition of underemployment is consistent with the International Labour Organisation (ILO) guidelines of time-related underemployment adopted in 1998. According to these guidelines, time-related underemployment exists when the hours of work of an employed person are below a threshold, and are insufficient in relation to an alternative employment situation in which the person is willing and available to engage. More specifically, people in time-related underemployment comprise all employed people (as defined) who satisfy the following three criteria:

- willingness to work additional hours - want to work more hours than they currently work. The ILO recommends that those who have actively sought to work additional hours should be distinguished from those who have not
- availability to work additional hours, within a specified period
- worked less than a threshold (determined according to national circumstances) relating to working time - the ABS underemployment framework uses a threshold (35

hours in the reference week) based on the boundary between full-time and part-time work.

**22** A more detailed discussion is included in [Labour Statistics: Concepts, Sources and Methods](#) (cat. no. 6102.0.55.001), Chapter 5.

## PREVIOUS SURVEYS

**23** The Underemployed Workers Survey was conducted in May 1985, 1988 and 1991. In 1994, the survey became an annual survey, collected each September. Results of previous surveys were published in [Underemployed Workers, Australia](#) (cat. no. 6265.0); and the standard data service [Underemployed Workers, Australia](#) (cat. no. 6265.0.40.001) for 1994 and 1995.

## ACKNOWLEDGMENT

**24** The ABS draws extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated, without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the **Census and Statistics Act, 1905**.

## RELATED PUBLICATIONS

**25** ABS publications which may be of interest include:

- [Australian Labour Market Statistics](#) (cat. no. 6105.0)
- [Barriers and Incentives to Labour Force Participation](#) (cat. no. 6239.0)
- [Job Search Experience, Australia](#) (cat. no. 6222.0)
- [Labour Force, Australia](#) (cat. no. 6202.0)
- [Labour Force Experience, Australia](#) (cat. no. 6206.0)
- [Labour Mobility, Australia](#) (cat. no. 6209.0)
- [Labour Statistics: Concepts, Sources and Methods](#) (cat. no. 6102.0.55.001)
- [Microdata: Longitudinal Labour Force, Australia, 2008-2010](#) (cat. no. 6602.0)
- [Persons Not in the Labour Force, Australia](#) (cat. no. 6220.0)
- [Working Time Arrangements, Australia](#) (cat. no. 6342.0)

**26** Current publications and other products released by the ABS are available free of charge from the Statistics Page on the ABS website. The ABS also issues a daily Release Advice on the web site which details products to be released in the week ahead.

## Glossary

### GLOSSARY

**Available to start work**

Refers to people who were available to start work with more hours either in the reference week, or in the four weeks subsequent to the interview.

### **Contributing family workers**

People who work without pay in an economic enterprise operated by a relative.

### **Duration of current period of insufficient work**

For full-time workers who worked fewer than 35 hours in the reference week due to economic reasons, refers to the number of weeks they have been working fewer than 35 hours a week.

For part-time workers who would prefer to work more hours, refers to the number of weeks they have been wanting to work more hours.

As periods of insufficient work are recorded in full weeks and rounded down, this results in a slight understatement of duration.

### **Economic reasons**

Economic reasons for full-time workers having worked fewer than 35 hours in the reference week are:

- there was no work or not enough work available, e.g. due to material shortages;
- they were stood down; or
- they were on short time.

### **Employed**

People aged 15 years and over who, during the reference week:

- worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (comprising employees, employers and own account workers); or
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were:
  - away from work for less than four weeks up to the end of the reference week; or
  - away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four-week period to the end of the reference week; or
  - away from work as a standard work or shift arrangement; or
  - on strike or locked out; or
  - on workers' compensation and expected to return to their job; or
- were employers or own account workers who had a job, business or farm, but were not at work.

### **Employees**

People who:

- worked for a public or private employer; and
- received remuneration in wages, salary, or are paid a retainer fee by their employer and worked on a commission basis, or for tips or piece-rates or payment in kind; or
- operated their own incorporated enterprise with or without hiring employees.

## **Employers**

People who operate their own unincorporated economic enterprise or engage independently in a profession or trade, and hire one or more employees.

## **Full-time workers**

Employed people who usually worked 35 hours or more a week (in all jobs) or others who, although usually worked fewer than 35 hours a week, worked 35 hours or more during the reference week.

## **Fully employed workers**

Employed people who:

- worked full time during the reference week (including people who usually work part time but worked full time in the reference week); or
- usually work full time but worked fewer than 35 hours in the reference week for non-economic reasons (such as illness or injury, leave holiday or flexitime, or personal reasons); or
- part-time workers who would not prefer to work additional hours.

## **Interstate**

Refers to whether people were prepared to move to another state or territory if offered a suitable job.

## **Intrastate**

Refers to whether people were prepared to move to another part of their state or territory if offered a suitable job.

## **Level of highest educational attainment**

Level of highest educational attainment identifies the highest achievement a person has attained in any area of study. It is not a measurement of the relative importance of different fields of study but a ranking of qualifications and other educational attainments regardless of the particular area of study or the type of institution in which the study was undertaken.

Years 12, 11 and 10 include people who are currently undertaking school study (See Appendix 1 for more information).

## **Looking for work with more hours**

Looked for work with more hours at some time during the four weeks up to the end of the reference week.

## **Mean duration of insufficient work**

The mean duration of insufficient work is obtained by dividing the total number of weeks a group has had insufficient work by the number of people in that group.

### **Mean preferred number of extra hours**

The mean preferred number of extra hours is obtained by dividing the total preferred number of extra hours reported by a group by the number of people in that group.

### **Median duration of insufficient work**

The median duration of insufficient work is obtained by dividing underemployed workers into two equal groups, one comprising people whose duration of insufficient work is above the mid point, and the other comprising people whose duration is below it.

### **Non-economic reasons**

Non-economic reasons for full-time workers having worked fewer than 35 hours in the reference week include:

- holiday, flextime or study leave;
- own illness or injury or sick leave;
- standard work arrangements, shift work or rostered day(s) off;
- on strike, locked out or took part in an industrial dispute;
- bad weather or plant breakdown;
- began, left or lost job during the reference week; and
- personal reasons.

### **Not available to start work**

Refers to people who were not available to start work with more hours either in the reference week, or in the four weeks following the interview.

### **Not fully employed**

People who are not fully employed comprise part-time workers who would prefer to work more hours, and full-time workers who worked part-time hours in the reference week for economic reasons.

### **Own account workers**

People who operate his or her own unincorporated economic enterprise or engage independently in a profession or trade, and hires no employees.

### **Part-time workers**

Employed people who usually worked fewer than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work during the reference week.

### **Preferred number of extra hours**

The number of extra hours a week an underemployed worker would have preferred to work.

### **Preferred total number of hours**

The total number of hours per week an underemployed worker would prefer to work.

### **Reference week**

The week preceding the week in which the interview was conducted.

### **Status in employment**

Employed people classified by whether they were employees, employers, own account workers, or contributing family workers.

### **Suitable job**

A suitable job is:

- any job for which the person is qualified (if applicable), is capable of performing and which provides adequate job conditions (including pay, hours, travel to work, etc.).
- it is a job that would be accepted by the person irrespective of whether a move was required.

### **Underemployed workers**

Underemployed workers are employed people who would prefer, and are available for, more hours of work than they currently have. They comprise:

- part-time workers who would prefer to work more hours and were available to start work with more hours, either in the reference week or in the four weeks subsequent to the survey; and
- full-time workers who worked part-time hours in the reference week for economic reasons (such as being stood down or insufficient work being available). It is assumed that these people would prefer to work full time in the reference week and would have been available to do so.

### **Underemployment rate**

The number of underemployed workers expressed as a percentage of the labour force.

### **Usual number of hours**

The number of hours usually worked in a week.

## **Abbreviations**

### **ABBREVIATIONS**

'000	thousand
ABS	Australian Bureau of Statistics
ASCED	Australian Standard Classification of Education
ILO	International Labour Organization

LFS	Labour Force Survey
n.f.d.	not further defined
OMIE	owner manager of incorporated enterprise
RSE	relative standard error
SACC	Standard Australian Classification of Countries
SE	standard error

## **Educational Attainment (Appendix)**

### **APPENDIX 1 EDUCATIONAL ATTAINMENT**

#### **CLASSIFICATION OF EDUCATION**

In 2001, the ABS Classification of Qualifications (ABSCQ) (cat. no. 1262.0) was replaced by the Australian Standard Classification of Education (ASCED) (cat. no. 1272.0). The ASCED is a national standard classification which can be applied to all sectors of the Australian education system including schools, vocational education and training and higher education. ASCED replaces a number of classifications previously used in administrative and statistical systems, including the ABSCQ. The ASCED comprises two classifications: Level of Education and Field of Education.

Level of Highest Educational Attainment can be derived from information on Highest Year of School Completed and Level of Highest Non-school Qualification. The derivation process determines which of the 'non-school' or 'school' attainments will be regarded as the highest. Usually the higher ranking attainment will be self-evident, but in some cases some Secondary Education is regarded, for the purposes of obtaining a single measure, as higher than some Certificate level attainments.

The following decision table is used to determine which of the responses to questions on Highest Year of School Completed (coded to ASCED Broad Level 6) and Level of Highest Non-school Qualification (coded to ASCED Broad Level 5) will be regarded as the highest. It is emphasised that this table was designed for the purpose of obtaining a single value for the output variable Level of Highest Educational Attainment and is not intended to convey any other ordinality.

Decision Table: Level of Highest Educational Attainment							
ASCED LEVEL OF EDUCATION CODES	Certificate n.f.d. (500)	Certificate III or IV n.f.d. (510)	Certificate IV (511)	Certificate III (514)	Certificate I or II n.f.d. (520)	Certificate II (521)	Certificate I (524)
Secondary Education n.f.d. (600)	Certificate n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Certificate I or II n.f.d.	Certificate II	Certificate I
Senior Secondary Education n.f.d. (610)	Senior Secondary n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Senior Secondary n.f.d.	Senior Secondary n.f.d.	Senior Secondary n.f.d.
Year 12 (611)	Year 12	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Year 12	Year 12	Year 12
Year 11 (613)	Year 11	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Year 11	Year 11	Year 11
Junior Secondary Education n.f.d. (620)	Certificate n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Certificate I or II n.f.d.	Certificate II	Certificate I
Year 10 (621)	Year 10	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Year 10	Certificate II	Year 10
Year 9 (622)	Certificate n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Certificate I or II n.f.d.	Certificate II	Certificate I
Year 8 (623)	Certificate n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Certificate I or II n.f.d.	Certificate II	Certificate I
Year 7 (624)	Certificate n.f.d.	Certificate III or IV n.f.d.	Certificate IV	Certificate III	Certificate I or II n.f.d.	Certificate II	Certificate I

The decision table is also used to rank the information provided in a survey about the qualifications and attainments of a single individual. It does not represent any basis for comparison between differing qualifications. For example, a person whose Highest Year of School Completed was Year 12, and whose Level of Highest Non-school Qualification was a Certificate III, would have those responses crosschecked on the decision table and would as a result have their Level of Highest Educational Attainment output as Certificate III. However, if the same person answered 'Certificate n.f.d.' to the highest non-school qualification question, without offering any further detail, it would be crosschecked against Year 12 on the decision table as 'Certificate not further defined'. The output would then be 'Year 12'. The decision table, therefore, does not necessarily imply that one qualification is 'higher' than the other.

## Populations and Data Item List (Appendix)

### APPENDIX 2 POPULATIONS AND DATA ITEMS LIST

#### DATA AVAILABLE ON REQUEST

The ABS has a range of data available on request from the Underemployed Workers Survey. This section lists the data items and populations which relate to the survey. More detailed breakdowns of some data items may also be available on request.

The population(s) for a particular data item refers to the person in the survey to whom the data item relates. Where alternative output categories are available for the same data item,

these are shown and the data item name is followed by a bracketed numeral (e.g. Country of birth (2)).

For more information about ABS data available on request, contact National Information and Referral Service in Canberra on 1300 135 070 or via email to <[client.services@abs.gov.au](mailto:client.services@abs.gov.au)>, or contact Labour Supplementary Survey Section on (02) 6252 7206 or via email to <[labour.statistics@abs.gov.au](mailto:labour.statistics@abs.gov.au)>.

### **Population 1:**

Employed persons

### **Population 2:**

Full-time workers

### **Population 3:**

Part-time workers

### **Population 4:**

Part-time workers who would prefer more hours

### **Population 5:**

Part-time workers who would prefer more hours who had been looking for work with more hours or were available to start work with more hours in the reference week or within four weeks

### **Population 6:**

Underemployed part-time workers

### **Population 7:**

Underemployed workers

<b>Data items</b>	<b>Populations</b>
1 State or territory of usual residence New South Wales Victoria Queensland South Australia Western Australia Tasmania Northern Territory Australian Capital Territory	All
2 Area of usual residence	All

	State capital city	
	Balance of state/territory	
3	Region of usual residence	All
	Standard labour force dissemination regions	
4	Sex	All
	Males	
	Females	
5	Social marital status	All
	Married	
	Not married	
6	Relationship in household	All
	Family member	
	Husband, wife or partner	
	With dependants	
	Without dependants	
	Lone parent	
	With dependants	
	Without dependants	
	Dependent student	
	Non-dependent child	
	Other family person	
	Non-family member	
	Lone person	
	Not living alone	
	Relationship not determined	
7A	Country of birth and period of arrival	All
	Born in Australia	
	Born overseas	
	Arrived before 1971	
	Arrived 1971-1980	
	Arrived 1981-1990	
	Arrived 1991-2000	
	Arrived 2001-2010	
	Arrived 2011 to survey date	
7B	Country of birth (1)	All
	Born in Australia	
	Born overseas	
	Born in main English-speaking countries	
	Born in other than main English-speaking countries	
7C	Country of birth (2)	All
	Born in Australia	
	Born overseas	
	Oceania and Antarctica	
	North-West Europe	
	Southern and Eastern Europe	
	North Africa and the Middle East	
	South-East Asia	
	North-East Asia	
	Southern and Central Asia	
	Americas	
	Sub-Saharan Africa	
8	Age group (years)	All
	15-19	
	20-24	
	25-34	
	35-44	
	45-54	
	55-59	
	60-64	
	65-69	
	70 and over	
	Note: Age collected in single years	
9A	Underemployment status	7
	Worked less than 35 hours in the reference week for economic reasons	
	Part-time workers who would prefer more hours who were available to start work with more hours in the reference week or within four weeks	

Looking and available to start		
Not looking but available to start		
<b>9B Whether looking and/or available</b>		<b>4-6</b>
Had been looking for work with more hours		
Looking and available to start		
Looking and available in the reference week		
Looking and not available in the reference week but available within four weeks		
Looking and not available to start		
Had not been looking for work with more hours		
Not looking but available to start		
Not looking but available in the reference week		
Not looking and not available in the reference week but available within four weeks		
Not looking and not available to start		
<b>9C Whether available and/or looking</b>		<b>4-6</b>
Available to start work with more hours		
Available in the reference week		
Looking		
Not looking		
Available within four weeks (but not in the reference week)		
Looking		
Not looking		
Not available to start work with more hours		
Looking		
Not looking		
<b>10 Full-time or part-time status</b>		<b>All</b>
Employed persons		
Full-time workers		
Worked 35 hours or more in the reference week		
Worked less than 35 hours in the reference week		
For non-economic reasons		
For economic reasons		
Part-time workers		
Would not prefer to work more hours		
Would prefer to work more hours		
Prefers more part-time hours		
Prefers full-time hours		
<b>11 Whether fully employed</b>		<b>All</b>
Fully employed		
Part-time workers who would prefer more hours and persons who worked less than 35 hours in the reference week for economic reasons		
<b>12 Status in employment</b>		<b>All</b>
Employees		
Employers		
Own account workers		
Contributing family workers		
<b>13 Number of hours worked in the reference week</b>		<b>4-7</b>
0-5		
6-10		
11-15		
16-20		
21-29		
30-34		
35 or more		
Note: Hours worked collected in single hours		
<b>15 Duration of current period of insufficient work</b>		<b>4-7</b>
1 week and under 4 weeks		
4 weeks and under 13 weeks		
13 weeks and under 52 weeks		
52 weeks and over		
Note: Period of insufficient work collected in single weeks		
<b>16A Level of highest educational attainment</b>		<b>4-7</b>
Postgraduate Degree		
Graduate Diploma/Graduate Certificate		
Bachelor Degree		
Advanced Diploma/Diploma		

Certificate III/IV	
Certificate I/II	
Certificate not further defined	
Year 12	
Year 11	
Year 10 or below	
Other education	
Level not determined	
No educational attainment	
16B Level of highest non-school qualification	4-7
With a non-school qualification	
Postgraduate Degree	
Graduate Diploma/Graduate Certificate	
Bachelor Degree	
Advanced Diploma/Diploma	
Certificate III/IV	
Certificate I/II	
Certificate not further defined	
Level not determined	
Without a non-school qualification	
16C Highest year of school completed	4-7
Year 12	
Year 11	
Year 10	
Year 9	
Year 8 or below	
Never attended school	
16D Highest non-school qualification and whether qualification obtained overseas or within Australia	4-7
Born in Australia	
Born overseas	
With a non-school qualification	
Qualification obtained overseas	
Qualification obtained in Australia	
Without a non-school qualification	
17 Whether would move interstate if offered a suitable job	4-7
Would move interstate	
Would not move interstate	
Might move interstate	
Did not know	
18 Whether would move intrastate if offered a suitable job	4-7
Would move intrastate	
Would not move intrastate	
Might move intrastate	
Did not know	
19 Whether would prefer to change occupation to work more hours	4-7
Would prefer to change occupation	
Would prefer not to change occupation	
No preference	
20 Whether would prefer to change employer to work more hours	4-7
Would prefer to change employer	
Would prefer not to change employer	
No preference	
21 All steps taken to find work with more hours in the last four weeks	4-6
Asked current employer for more work	
Contacted prospective employers	
Registered with Centrelink	
Checked noticeboards	
Contacted an employment agency	
Looked in newspapers	
Searched Internet sites	
Answered a newspaper advertisement for a job	
Advertised or tendered for work	
Contacted friends or relatives	
Other steps taken to find work	
Had not been looking for work with more hours	
22 Whether registered with Centrelink	4-6

Registered with Centrelink for job search assistance	
Not registered with Centrelink for job search assistance	
Had not been looking for work with more hours	
23 Preferred number of extra weekly hours	4-6
Less than 10 hours	
10-19	
20-29	
30 or more	
Note: Preferred extra hours collected in single hours	
24 Main difficulty in finding work with more hours	4-6
Had been looking for work with more hours	
Own ill health or disability	
Considered too young by employers	
Considered too old by employers	
Unsuitable hours	
Too far to travel/transport problems	
Lacked necessary skills or education	
Language difficulties	
Insufficient work experience	
No vacancies in line of work	
Too many applicants for available jobs	
No vacancies at all	
Difficulties with ethnic background	
Difficulties in finding child care	
Other family responsibilities	
Other difficulties	
No difficulties reported	
Had not been looking for work with more hours	
25 Weekly hours usually worked	4-6
1-5	
6-10	
11-15	
16-20	
21-29	
30-34	
Note: Hours usually worked collected in single hours	
26 Preferred total number of weekly hours	4-6
Less than 30 hours	
30-34	
35-39	
40 or more	
Note: Preferred total hours collected in single hours	
27 Employment type	All
Employees (excluding OMIEs)	
Owner managers of incorporated enterprises	
Owner managers of unincorporated enterprises	
Contributing family workers	

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## Supplementary Surveys (Appendix)

### APPENDIX 3 SUPPLEMENTARY SURVEYS

#### SUPPLEMENTARY SURVEYS

The Monthly Population Survey program and the Multi-Purpose Household Survey program collect data on particular aspects of the labour force. The following is an historical list of

supplementary surveys to the monthly labour force surveys. Data from these surveys are available on request and can be obtained by contacting the ABS.

	cat. no.	Frequency	Latest issue
<b>Monthly Population Supplementary Surveys</b>			
Characteristics of Recent Migrants, Australia(a)	6250.0	Irregular	November 2010
Child Employment, Australia	6211.0	Irregular	June 2006
Childhood Education and Care, Australia	4402.0	Irregular	June 2011
Education and Work, Australia	6227.0	Annual	May 2012
Employee Earnings, Benefits and Trade Union Membership, Australia	6310.0	Annual	August 2011
Forms of Employment, Australia	6359.0	Annual	November 2011
Job Search Experience, Australia	6222.0	Annual	July 2012
Labour Force Experience, Australia	6206.0	Biennial	February 2011
Labour Mobility, Australia	6209.0	Biennial	February 2012
Locations of Work, Australia	6275.0	Irregular	November 2008
Multiple Jobholding, Australia(b)	6216.0	Irregular	August 1997
Persons Not in the Labour Force, Australia	6220.0	Annual	September 2011
Pregnancy and Employment Transitions, Australia	4913.0	Irregular	November 2011
Underemployed Workers, Australia	6265.0	Annual	September 2012
Working Time Arrangements, Australia(c)	6342.0	Irregular	November 2009
<b>Multi-Purpose Household Surveys</b>			
Barriers and Incentives to Labour Force Participation, Australia	6239.0	Biennial	2010-2011
Retirement and Retirement Intentions, Australia	6238.0	Biennial	2010-2011
Work-Related Injuries, Australia	6324.0	Irregular	2009-2010

(a) This product replaces the publication Labour Force Status and Other Characteristics of Migrants, Australia (cat. no. 6250.0).

(b) Data available on request for July 2001 or see Employment Arrangements, Retirement and Superannuation, Australia, Apr to Jul 2007 (Re-issue) (Cat. no. 6361.0).

(c) This product replaces the publication Working Arrangements, Australia (cat. no. 6342.0).

## Quality Declaration - Summary

### QUALITY DECLARATION - SUMMARY

### INSTITUTIONAL ENVIRONMENT

For information on the institutional environment of the Australian Bureau of Statistics (ABS), including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

### RELEVANCE

The Underemployed Workers Survey collects a range of information about the characteristics of underemployed workers aged 15 years and over. These include the number of hours usually worked, number of preferred hours, steps taken to find work with more hours, and difficulties in finding work with more hours.

Underemployed workers are employed people who would prefer and are available for more hours of work than they currently have. They comprise:

- Part-time workers who want and are available for, more hours of work than they currently have, either in the reference week or in the four weeks subsequent to the survey
- Full-time workers who worked part-time hours during the reference week for economic reasons (such as being stood down or insufficient work available). It is assumed that these people would prefer to work full-time in the reference week and would have been available to do so.

The number of underemployed workers contributes to measuring underutilised labour resources in the economy.

## **TIMELINESS**

The Underemployed Workers Survey is conducted annually during September as a supplement to the monthly Labour Force Survey. Results from this survey are released approximately six months after the completion of enumeration (i.e. during February) in the publication *Underemployed Workers, Australia* (cat. no. 6265.0).

The Underemployed Workers Survey will be conducted again in September 2013.

## **ACCURACY**

Estimates from the Underemployed Workers Survey are subject to sampling and non-sampling errors. Relative standard error (RSE) is a measure of the size of the sampling error affecting an estimate, i.e. the error introduced by basing estimates on a sample of the population rather than the full population. Non-sampling errors are inaccuracies that occur due to imperfections in reporting by respondents and interviewers, and errors made in coding and processing data.

The Underemployed Workers Survey was designed primarily to provide estimates at the Australia level. Broad estimates are available for State or Territory and Capital city/Balance of state/territory. Users should exercise caution when using estimates at these level because of the presence of high sampling errors. RSEs are available for all estimates in the Technical Note of the publication.

## **COHERENCE**

The Underemployed Workers Survey is the primary ABS data source on characteristics of underemployed workers. Information is also collected in the Labour Force Survey on a quarterly basis.

The conceptual framework presented in the publication is described in more detail in Chapter 5 of *Labour Statistics: Concepts, Sources and Methods* (cat. no. 6102.0.55.001). The statistics from this survey are comparable with other labour statistics produced by the ABS. The ABS definition of underemployment is consistent with the International Labour Organisation definition of time-related underemployment adopted in 1998.

The ABS has been conducting the Underemployed Workers Survey irregularly since 1985, and annually since 1994. Key changes made to the Underemployed Workers Survey since 1994 include:

- Prior to September 1994, part-time workers who would prefer more hours of work were asked whether they were available to start work with more hours within the subsequent four weeks. From September 1994, an additional question was added to determine their availability to start work with more hours during the reference week. This question was added to the survey so that estimates of underemployment could be more easily aligned with the then current International Labour Organization (ILO) recommendations on underemployment.
- As part of the 2001 LFS questionnaire redesign, people who were on short-term unpaid leave initiated by the employer, are now classified as employed. This approach is consistent with ILO recommendations on formal job attachment. Analysis of data from the LFS shows that many of these people usually worked part-time, and that a number of these had a preference to work more hours. However, overall, these people contribute only marginally to the change in part-time workers who would prefer more hours.
- From July 2004, a change was made to the category 'considered too young or too old by employers' for the items 'all difficulties in finding work with more hours' and 'main difficulty in finding work with more hours'. The category has been split into 'considered too young by employers' and 'considered too old by employers'.
- In September 2008 there was a substantial increase in the number of part-time workers who preferred more hours and underemployed workers. This was due to a change in the question being asked of part-time workers. From September 2008, part-time workers were asked "Would you prefer to work more hours than you usually work?". In previous surveys part-time workers were asked "Would you prefer a job in which you worked more hours a week?". The question was altered to be consistent with the LFS and is now a broader and more inclusive of people's situations as it relates to a preference for more hours of work. This change contributed to an additional 115,800 people who were classified as part-time workers who preferred more hours and an additional 131,500 people who were classified as underemployed workers in 2008. Users need to exercise care when comparing the number of part-time workers who preferred more hours and underemployed workers from 2008 onwards with previous releases because of this break in series.
- Generally revisions are made to population benchmarks for the Labour Force Survey (LFS) following the final rebasing of population estimates to the latest five-yearly Census of Population and Housing, or when the need arises. From February 2009 labour force estimates have been compiled during population benchmarks based on the 2006 Census of Population and Housing. Revisions were applied to population benchmarks in July 2010 and December 2012 to take into account the latest available population estimates in the LFS to take into account the Census of Population and Housing. The latest revision undertaken in December 2012 are not reflected in the estimates presented in Underemployed Workers, September 2012 (cat. no. 6265.0). These revisions do not involve any changes to the data collected in the Labour Force Survey. Changes to the LFS population benchmarks impact primarily on the magnitude of the labour force estimates (i.e. Employment and unemployment) that are directly related to the underlying size of the population. For more details on population benchmarks, see the Explanatory Notes in Labour Force, Australia (cat. no. 6202.0), and for details about revisions made, see the article in the November 2012 issue of Labour Force, Australia (cat. no. 6202.0) and the article in the September 2010 issue

of Labour Force, Australia (cat. no. 6202.0).

For more information on changes to the survey see Chapter 21.14 of Labour Statistics: Concepts, Sources and Methods (cat. no. 6102.0.55.001).

## INTERPRETABILITY

The Underemployed Workers publication contains tables with footnoted data and a Summary of Findings to aid interpretation of the results of the survey. Detailed Explanatory Notes, a Technical Note and a Glossary are also included providing information on the terminology, classifications and other technical aspects associated with these statistics.

Further commentary is often available through articles and data published in other ABS products, including:

- Australian Labour Market Statistics (cat. no. 6105.0) - refer to articles and analysis for past articles.
- Australian Social Trends (cat. no. 4102.0)
- Year Book, Australia (cat. no. 1301.0) - refer to the 'Labour' chapter.

## ACCESSIBILITY

Underemployed Workers, Australia (cat. no. 6265.0) is released electronically via the ABS website as a PDF publication. Additional data may be available on request (Subject to data quality). For a list of data items available see Appendix 2 of the publication. Note that detailed data can be subject to high relative standard errors and in some cases may result in data being confidentialised.

Labour underutilisation measures were published in Underemployed Workers, Australia (cat. no. 6265.0) in 2006-2008 however, are no longer presented in this publication. These measures are published annually in the April issue of Australian Labour Market Statistics (cat. no. 6105.0) and within Measures of Australia's Progress: Summary Indicators (cat. no. 1370.0.55.001). From August 2009 they are also presented in the monthly Labour Force Survey (cat. no. 6202.0).

For further information about these or related statistics, contact the National Information and Referral Centre on 1300 135 070 or Labour Statistics on (02) 6252 7206 or via email to <[labour.statistics@abs.gov.au](mailto:labour.statistics@abs.gov.au)>.

## Quality Declaration - Relevance

### Employed

All persons aged 15 years and over who, during the reference week:

- worked for one hour or more for pay, profit, commission or payment in kind, in a job or business, or on a farm (comprising employees, employers and own account workers); or

- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were:
  - away from work for fewer than four weeks up to the end of the reference week; or
  - away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four-week period to the end of the reference week; or
  - away from work as a standard work or shift arrangement; or
  - on strike or locked out; or
  - on workers' compensation and expected to return to their job; or
- were employers or own account workers who had a job, business or farm, but were not at work.

### Full-time workers

Employed people who usually worked 35 hours or more a week (in all jobs) or those who, although usually working fewer than 35 hours a week, worked 35 hours or more during the reference week.

### Part-time workers

Employed people who usually worked fewer than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work during the reference week.

## **Data Quality (Technical Note)**

### **TECHNICAL NOTE DATA QUALITY**

#### **INTRODUCTION**

**1** Estimates in this publication are based on information obtained from occupants of a sample of dwellings, and are subject to sampling variability. That is, they may differ from those estimates that would have been produced if all dwellings had been included in the survey. One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might have varied by chance because only a sample of dwellings was included. There are about two chances in three (67%) that a sample estimate will differ by less than one SE from the number that would have been obtained if all dwellings had been included, and about 19 chances in 20 (95%) that the difference will be less than two SEs. Another measure of the likely difference is the relative standard error (RSE), which is obtained by expressing the SE as a percentage of the estimate.

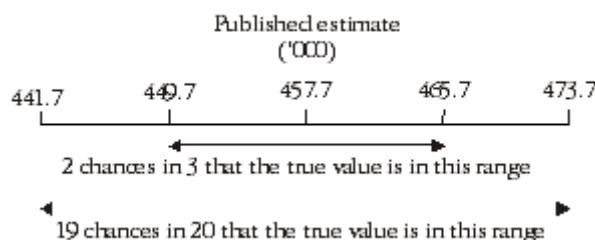
**2** Due to space limitations, it is impractical to print the SE of each estimate in the publication. Instead, a table of SEs is provided to determine the SE for an estimate from the size of that estimate ( see table T1). The SE table is derived from a mathematical model, referred to as the 'SE model', which is created using data from a number of past Labour Force Surveys. It should be noted that the SE model only gives an approximate value for the SE for any particular estimate, since there is some minor variation between SEs for different estimates of the same size.

## CALCULATION OF STANDARD ERROR

3 An example of the calculation and the use of SEs in relation to estimates of persons is as follows. Table 4 shows the estimated number of female underemployed part-time workers was 457,700. Since this estimate is between 300,000 and 500,000, table T1 shows that the SE for Australia will lie between 6,650 and 8,350 and can be approximated by interpolation using the following general formula:

$$\begin{aligned} \text{SE of estimate} \\ &= \text{lower SE} + \left( \left( \frac{\text{size of estimate} - \text{lower estimate}}{\text{upper estimate} - \text{lower estimate}} \right) \times (\text{upper SE} - \text{lower SE}) \right) \\ &= 6,650 + \left( \left( \frac{457,700 - 300,000}{500,000 - 300,000} \right) \times (8,350 - 6,650) \right) \\ &= 8,000 \text{ (rounded to the nearest 100)} \end{aligned}$$

4 Therefore, there are about two chances in three that the value that would have been produced if all dwellings had been included in the survey will fall within the range 449,700 to 465,700 and about 19 chances in 20 that the value will fall within the range 441,700 to 473,700. This example is illustrated in the following diagram.



5 In general, the size of the SE increases as the size of the estimate increases. Conversely, the RSE decreases as the size of the estimate increases. Very small estimates are thus subject to such high RSEs that their value for most practical purposes is unreliable. In the tables in this publication, only estimates with RSEs of 25% or less are considered reliable for most purposes. Estimates with RSEs greater than 25% but less than or equal to 50% are preceded by an asterisk (e.g.\*3.2) to indicate they are subject to high SEs and should be used with caution. Estimates with RSEs of greater than 50%, preceded by a double asterisk (e.g.\*\*0.3), are considered too unreliable for general use and should only be used to aggregate with other estimates to provide derived estimates with RSEs of less than 25%.

## MEANS AND MEDIANS

6 The RSEs of estimates of mean duration of insufficient work, median duration of insufficient work and mean preferred number of extra hours are obtained by first finding the RSE of the estimate of the total number of persons contributing to the mean or median ( see table T1) and then multiplying the resulting number by the following factors:

- mean duration of insufficient work: 1.6
- median duration of insufficient work: 2.5
- mean preferred number of extra hours: 0.7

7 The following is an example of the calculation of SEs where the use of a factor is required.

Table 4 shows that the estimated number of male underemployed part-time workers was 273,300 with a median duration of insufficient work of 26 weeks. The SE of 273,300 can be calculated from table T1 (by interpolation) as 6,400. To convert this to an RSE we express the SE as a percentage of the estimate or  $6,400/273,300 = 2.3\%$ .

**8** The RSE of this estimate of median duration of insufficient work is calculated by multiplying this number (2.3%) by the appropriate factor shown in paragraph 6 (in this case 2.5):  $2.5 \times 2.3 = 5.8\%$ . The SE of this estimate of median duration of insufficient work is therefore 5.8% of 28, i.e. about 2 (rounded to the nearest whole week). Therefore, there are two chances in three that the median duration of insufficient work for males that would have been obtained if all dwellings had been included in the survey would have been within the range 24-28 weeks, and about 19 chances in 20 that it would have been within the range 22-30 weeks.

## PROPORTIONS AND PERCENTAGES

**9** Proportions and percentages formed from the ratio of two estimates are also subject to sampling errors. The size of the error depends on the accuracy of both the numerator and the denominator. A formula to approximate the RSE of a proportion is given below. This formula is only valid when x is a subset of y.

$$RSE\left(\frac{x}{y}\right) = \sqrt{[RSE(x)]^2 - [RSE(y)]^2}$$

**10** Considering the example from paragraph 3, of the 457,700 female underemployed part-time workers, 184,700 or 40.4% had insufficient work for 52 weeks and over. The SE of 184,700 may be calculated by interpolation as 5,400. To convert this to an RSE we express the SE as a percentage of the estimate, or  $5,400/184,700 = 2.9\%$ . The SE for 457,700 was calculated previously as 8,000, which converted to an RSE is  $8,000/457,700 = 1.7\%$ . Applying the above formula, the RSE of the proportion is:

$$RSE = \sqrt{(2.9)^2 - (1.7)^2} = 2.3\%$$

**11** Therefore, the SE for the proportion of females who have a current period of insufficient work of 52 weeks or more is 0.9 percentage points ( $= (40.4/100) \times 2.3$ ). Therefore, there are about two chances in three that the proportion of females who have a current period of insufficient work of 52 weeks or more was between 39.5% and 41.3% and 19 chances in 20 that the proportion is within the range 38.6% to 42.2%.

## DIFFERENCES

**12** Published estimates may also be used to calculate the difference between two survey estimates (of numbers or percentages). Such an estimate is subject to sampling error. The sampling error of the difference between two estimates depends on their SEs and the relationship (correlation) between them. An approximate SE of the difference between two estimates ( $x-y$ ) may be calculated by the following formula:

$$SE(x-y) = \sqrt{[SE(x)]^2 + [SE(y)]^2}$$

**13** While this formula will only be exact for differences between separate and uncorrelated characteristics or subpopulations, it is expected to provide a good approximation for all differences likely to be of interest in this publication.

## STANDARD ERRORS

### T1 STANDARD ERRORS OF ESTIMATES

Size of estimate (persons)	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	AUST.	
	no.	no.	no.	no.	no.	no.	no.	no.	SE no.	RSE %
100	290	290	220	180	220	110	70	100	110	110.0
200	400	380	320	240	290	160	110	170	190	95.0
300	470	440	390	280	340	190	140	210	260	86.7
500	580	540	500	340	420	240	180	270	380	76.0
700	660	620	580	390	480	270	210	300	480	68.6
1,000	760	710	680	450	550	310	240	330	610	61.0
1,500	900	830	810	530	640	360	290	360	780	52.0
2,000	1 010	930	910	590	710	390	320	390	920	46.0
2,500	1 100	1 000	1 000	650	800	400	350	400	1 050	42.0
3,000	1 200	1 100	1 050	700	850	450	350	450	1 150	38.3
3,500	1 250	1 150	1 100	700	900	450	400	450	1 250	35.7
4,000	1 300	1 200	1 200	750	900	500	400	450	1 350	33.8
5,000	1 450	1 300	1 250	800	1 000	500	450	500	1 500	30.0
7,000	1 650	1 500	1 450	900	1 150	600	550	600	1 700	24.3
10,000	1 850	1 700	1 600	1 050	1 300	700	650	700	2 000	20.0
15,000	2 150	1 950	1 800	1 200	1 500	850	950	850	2 350	15.7
20,000	2 400	2 200	1 950	1 350	1 650	1 000	1 200	1 000	2 550	12.8
30,000	2 800	2 550	2 250	1 550	1 900	1 250	1 650	1 250	2 900	9.7
40,000	3 100	2 800	2 500	1 800	2 100	1 500	2 050	1 500	3 150	7.9
50,000	3 350	3 050	2 750	2 000	2 300	1 700	2 450	1 650	3 400	6.8
100,000	4 250	4 000	3 750	3 000	3 400	2 400	4 300	2 250	4 300	4.3
150,000	5 000	4 850	4 600	3 850	4 450	2 850	5 900	2 500	5 000	3.3
200,000	5 750	5 650	5 400	4 550	5 350	3 200	7 350	2 650	5 600	2.8
300,000	7 250	7 250	6 850	5 550	6 750	3 700	10 050	2 800	6 650	2.2
500,000	10 150	10 050	9 250	7 000	8 600	4 250	..	2 800	8 350	1.7
1,000,000	15 100	15 250	13 200	8 900	10 950	4 850	..	..	11 750	1.2
2,000,000	20 350	22 550	17 700	10 600	12 700	..	..	..	17 050	0.9
5,000,000	25 900	36 100	23 900	11 900	13 250	..	..	..	28 450	0.6
10,000,000	27 750	49 750	27 950	..	..	..	..	..	37 950	0.4
15,000,000	..	..	..	..	..	..	..	..	42 850	0.3

.. not applicable

### T2 levels at which estimates have relative standard errors of 25% and 50%(a)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	AUST.
	no.	no.	no.	no.	no.	no.	no.	no.	no.
<b>25% RSE</b>									
Mean duration of insufficient work	13 400	12 400	11 100	5 000	8 000	2 500	2 000	2 400	15 300
Median duration of insufficient work	32 600	28 900	27 400	15 700	18 500	6 800	70 600	9 600	28 700
Mean preferred number of extra hours	3 900	3 900	3 200	1 700	2 500	1 000	700	900	3 800
All other estimates	6 300	5 400	5 100	2 600	3 500	1 400	1 100	1 400	6 800
<b>50% RSE</b>									
Mean duration of insufficient work	4 400	4 100	3 900	1 700	2 700	900	600	1 000	4 700

Median duration of insufficient work	10 900	9 700	10 100	5 400	6 300	2 400	4 500	3 100	9 900
Mean preferred number of extra hours	1 200	1 300	1 000	600	800	300	200	300	700
All other estimates	2 000	1 800	1 700	800	1 200	500	300	600	1 300

(a) Refers to the number of persons contributing to the estimate.

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